WHAT IS CLAIMED IS:

1. A wave-front aberration measuring method with which to measure a wave-front aberration in an optical system subject to measurement, said measuring method comprising:

measuring, first, aberration components of a first set of order terms out of aberration components of order terms of a predetermined basis in which the wave-front aberration in said optical system is expanded;

calculating correction information for aberration components of a second set of order terms based on a predetermined order term's aberration component out of the aberration components of said first set of order terms;

measuring aberration components of said second set of order terms in said optical system; and

correcting the result of said measuring of aberration components of said second set of order terms based on said correction information.

2. A wave-front aberration measuring method according to claim 1, wherein the expansion in said predetermined basis is an expansion in a set of fringe Zernike polynomials.

3. A wave-front aberration measuring method according to claim 1, wherein said first set of order terms include all of a lowest order term through a first

ordinal order term in said expansion, and wherein said second set of order terms include all of said lowest order term through a second ordinal order term in said expansion, said second ordinal being lower than said first ordinal.

4. A wave-front aberration measuring method according to claim 3, wherein said predetermined order term is included in said first set of order terms and not in said second set of order terms, wherein calculating said correction information comprises:

calculating a first wave-front with letting aberration components of other order terms of said first set of order terms measured than said predetermined order term be zero; and

calculating as said correction information respective correction amounts for aberration components of said second set of order terms based on a model for a measuring system that measures aberration components of said second set of order terms and said first wave-front, and

wherein the aberration components of said second set of order terms measured are individually corrected based on said correction information.

5. A wave-front aberration measuring method according to claim 3, wherein said predetermined order term is included in said first set of order terms and not

in said second set of order terms, wherein calculating said correction information comprises calculating as said correction information a first wave-front with letting aberration components of other order terms of said first set of order terms measured than said predetermined order term be zero, and

wherein correcting based on said correction information comprises:

calculating a second wave-front that has aberration components of said second set of order terms measured by a measuring system that measures aberration components of said second set of order terms;

calculating a third wave-front by correcting said second wave-front based on said first wave-front; and

calculating corrected aberration components of said second set of order terms, based on said third wave-front and a model for said measuring system.

6. A wave-front aberration measuring method according to claim 1, wherein measuring aberration components of said second set of order terms comprises:

forming a plurality of pattern images by dividing by use of a predetermined optical system a wave-front of light having passed through said optical system; and

calculating aberration components of said second set of order terms, based on positions of said plurality of pattern images formed.

7. A wave-front aberration measuring method according to claim 1, wherein measuring aberration components of said second set of order terms comprises:

imaging, after placing at the object plane of said optical system a plurality of divided pattern areas on each of which a pattern that produces light passing through a respective area of a plurality of areas on the pupil plane of said optical system is formed, said patterns formed on said plurality of divided pattern areas through said optical system; and

calculating aberration components of said second set of order terms, based on positions of images of said pattern, formed by said optical system.

8. A wave-front aberration measuring unit which measures a wave-front aberration in an optical system subject to measurement, said measuring unit comprising:

a storage unit that stores calculated correction information for aberration components of a second set of order terms based on a predetermined order term's aberration component out of aberration components of a first set of order terms measured before out of aberration components of order terms of a predetermined basis in which the wave-front aberration in said optical system is expanded;

a measuring system that measures aberration components of said second set of order terms of the wave-front aberration in said optical system; and

a correcting unit that corrects the measuring result of said measuring system with said correction information.

9. A wave-front aberration measuring unit according to claim 8, wherein the expansion in said predetermined basis is an expansion in a set of fringe Zernike polynomials.

10. A wave-front aberration measuring unit according to claim 8, wherein said measuring system comprises:

a wave-front dividing device that divides a wave-front of light having passed through said optical system to form a plurality of pattern images; and

an aberration-component calculating unit that calculates aberration components of said second set of order terms, based on positions of said plurality of pattern images formed.

11. A wave-front aberration measuring unit according to claim 10, wherein said wave-front dividing device is a micro-lens array where lens elements are arranged in a matrix.

12. A wave-front aberration measuring unit according to claim 8, wherein said measuring system comprises:

a pattern-formed member that is placed on the object plane's side of said optical system and has a plurality of divided pattern areas on each of which a pattern that produces light passing through a respective area of a plurality of areas on the pupil plane of said optical system is formed; and

an aberration-component calculating unit that calculates aberration components of said second set of order terms, based on positions of images of said pattern, formed by said optical system.

13. An exposure apparatus which transfers a given pattern onto a substrate by illuminating said substrate with exposure light, said apparatus comprising:

an exposure apparatus main body that comprises a projection optical system arranged on the optical path of said exposure light; and

a wave-front aberration measuring unit according to claim 8 with said projection optical system as an optical system subject to measurement.

14. A device manufacturing method including a lithography process, wherein in the lithography process, an exposure apparatus according to claim 13 performs exposure.

15. A device manufactured according to the device manufacturing method of claim 14.